

OSTEOCHONDritis

- Osteochondritis : is a group of diseases occurring mainly in the epiphyses .
- Osteochondritis is not a very satisfactory term since there is no evidence of infection.
- It is of unknown aetiology but might ischaemia a cause of trauma to some extent.

* Types :-

(I) Infarctional epiphysitis :- classified into:-

1. Perth's disease : in proximal epiphysis of femur.
2. Kohler's disease : in nucleus of Navicular (tarsal bone).
3. Kienbock's disease : in Lunate (carpal bone) ^{the only one which occurs in fully bone not epiphysis 20-40 yr.}
4. Freiberg's disease : head of 2nd or 3rd metatarsal bone.
5. Scheuermann's disease : in ring epiphysis of vertebral body.
6. Calve's disease : in central epiphysis of vertebral body.

(II) Tractional apophysitis :-

1. Osgood Schlatter's disease : in apophysis of tibial tubercle.
 2. Sever's disease : in apophysis of calcaneum.
- these two diseases are due to chronic strain caused by pull of tendons of quadriceps or tendo-achilis
 - On examination there is swelling and tenderness at the apophysis with no loss of movement, often bilateral.
 - Common in adolescent.
 - X-ray shows a fragmented & dense tibial ^{or calcaneal.} apophysis.
 - Self limiting ($\approx$ 6 weeks), restrict violent activities.

(III) Osteochondritis dissecans (Trans-chondral fracture):

- Patient : adolescent & young adult (8-14 yr).
- Pathology : small fragment of articular cartilage (commonly medial femoral condyle) undergoes a vascular necrosis which $\rightarrow$ separated cartilage $\rightarrow$ loose body in the knee $\rightarrow$ mild pain + Locking of knee.

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- investigation: x-ray may show fracture of medial condyle (suggest trauma) but the main invest. is clinical diagnosis & arthroscopy.
- ttt: arthroscopic removal of fragment (some may fix it by thin pins to heal).

* PERTHES' DISEASE :-

"Legg-Calvé-Perthes disease"

* Other names: Pseudo-coxalgia ; coxa plana ; osteochondritis Juvenilis of the hip.

* Definition: an avascular necrosis of proximal (upper) (capital) epiphysis of femur in children of unknown aetiology.

* Age & sex :- usual age 3-10 yrs more in boys. (4:1-♂:♀)
- about 85 % of cases are unilateral.

(if bilateral Gaucher disease or multiple epiphyseal dysplasia, must be considered).

* Pathology: There is infarction of epiphysis due to avascular necrosis (may be due to effusion → compress B. vessels)
- The bone die (cartilage survives) first → Granulation tissue invasion to infarcted epiphysis → broken bone which removed by osteoclast → fragmentation → flattening & deformity of epiphysis by pressure → replacement of dead tissue by new bone formed by osteoblast → restoration of bone texture unless deformity occurs → Permanent change in shape.
- Process takes about 2 years. (even 4 yrs)



Normal



avascular
necrosis
(ischemia)



Fragmentation
(osteoclast)



flattened
deformed
(pressure)



new bone
(osteoblast)

of Perthes's

* Clinical Picture (3-10 yrs - boy - unilateral)

- limping for few weeks or months.
- Slight Pain usually referred to knee & felt after activity
- O/E : limitation only of abduction & internal rotation
- Some cases have spasm & limit of all movement, so D/D is arthritis, and in early cases hip is irritable

* D/D: TB arthritis, DDH, transient synovitis TB.

* investigations: x-ray (AP & Lateral "Frog-leg lateral") shows:

- ↑ bone density is earliest sign ^{epiphysis} & wide joint space.
- Later: fragmentation, flattening & deformity ^{late subluxation} appear.
- Wide metaphysis with cystic changes. ± coxa vara.
- after healing new bone appear
- Later in life may there is osteoarthritis.

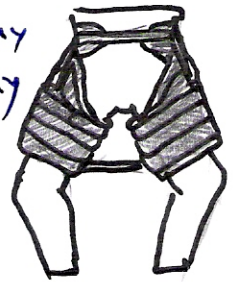
* Classification: according to progressive involvement of femoral epiphysis, Perthes disease classified into:

- class I: - involvement of $\leq 1/4$ of epiphysis (25%)
- class II: " " " $2/4$ " " (50%)
- class III: " " " $3/4$ " " (75%)
- class IV: " " " all epiphysis (100%)

* Treatment:

1. children < 5 years with minor involvement (<50%) → No ttt (as epiphysis still cartilage which unaffected by necrosis, and they have excellent remodeling potential).
2. young children also have tremendous remodeling potential and minor collapse can be outgrown before maturity.
3. Older children with radiological changes but have excellent range of movement (ROM) may require only observation & serial reexamination.
4. older children with significant collapse or progressive loss of ROM need the following ttt:
 - Containment (location of capital femoral epiphysis within the acetabulum) to prevent deformity

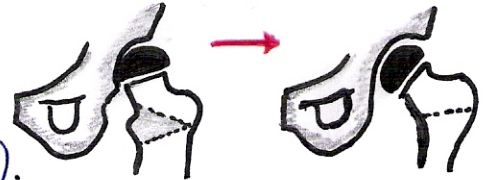
- Containment can be achieved by
 - holding hips widely abducted in plaster or brace
 - operative :- by subtrochanteric osteotomy of femur or hip (innominate) osteotomy then child bear weight after union.



* Prognosis:-

- Prognosis is good if:-

- age of diagnosis < 5yr.
- < 50% of femoral head involved.
- Little or no subluxation.
- hip motion maintained (abd. > 30°).



* Complications:-

- 1- osteoarthritis
- 2- coxa vara.
- 3- Coxa magna (short wide neck)
- 4- Subluxation & dislocation.
- 5- Pathological fracture.

* D/D OF BONE CYSTS:-

- ① Single bone cyst (^{called} solitary, unicameral or unilocular) occurs ^{more} in metaphysis of upper end of humerus or femur in children & adolescents.
- ② Cysts of hyperparathyroidism (Parathyroid osteodystrophy) = (Ostitis fibrosa cystica)
- ③ Hydatid cyst.
- ④ Fibrous dysplasia.
- ⑤ Cysts of bone tumour (osteoclastoma, etc)
- ⑥ Cysts of tumour like formations, e.g aneurysmal bone cyst & cystic degeneration of chondroma --- etc